

AIRPORT NOISE AND LAND USE COMPATIBILITY AT DOWNSTATE ILLINOIS AIRPORTS

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Illinois Department of
Energy and Natural Resources

James R. Thompson, Governor
Michael B. Witte, Director

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Airport Noise and Land Use Compatibility
at Downstate Illinois Airports
by
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Project No. 83/5002

James R. Thompson, Governor
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¹⁾Prepared under contract with the Illinois Department of Energy and Natural Resources as project number 83/5002; to Robert G. Ducharme, Inc., Deerfield, Illinois.

NOTE

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Introduction

This report represents the second and final phase of an airport noise demonstration project at the Decatur Airport that was launched in 1982. The objective of this project was to show how an airport and its neighboring community can develop and implement a program to correct and prevent airport noise exposure problems.

During Phase I the consultant for the Department of Energy and Natural Resources (ENR) worked with local municipal and county officials to develop a local airport noise input mitigation program for the Decatur Airport which could provide a basis for a statewide program. The purpose of Phase II was to continue work that was started in Phase I and to develop statewide airport noise recommendations for the smaller airports outside Chicago.

The rationale for this demonstration effort is rooted in the Department's concern for balancing the state's environmental and economic interests. The future growth in air travel and aircraft operations coupled with the potential for continued urban development around the state's airports creates a potential for serious noise exposure problems which could produce conflicts between airports and their neighbors. Avoiding these conflicts is essential in order to protect the residential environment and to ensure that our Illinois airports can meet the growing air transportation needs of local communities throughout the state, thereby contributing to the continued growth and vitality of our local economies.

In order for any type of airport noise program to be successful, reliable information on current and future noise generation and noise impact areas is needed to determine the nature and extent of existing and potential noise exposure problems, and to develop plans and programs to deal with these problems. With this in mind, ENR funded this present airport noise study, while in an earlier ENR-sponsored project, started in 1980 by Paul Schomer, airport noise mitigation control methods were reviewed. (See Paul Schomer, 1983).

In Phase I of Paul Schomer's report, computer prediction techniques were used to portray the existing and year-2000 noise environment near the Decatur Airport based upon current and projected year-2000 aircraft operational statistics.

In Phase II, actual aircraft noise levels at the airport were measured in the field and these measurements were used to validate the computer-predicted results. At the same time a "community attitudinal" study was conducted among residents near the Decatur Airport to determine how they reacted to noise generated by the airport.

Phase III of the study recommended specific noise impact mitigation methods for the Decatur Airport and Phase IV was the final phase which analyzed the data from the first three phases and integrated these results into the final report.

In keeping with the need for intergovernmental cooperation in dealing with airport noise problems, this report was prepared through the cooperative

efforts of all of the major parties with interests in the airport, including state and local government officials and private officials representing airport users and various segments of the Decatur business community working through the Decatur Area Task Force on Airport Noise. The Task Force consisted of:

Mayor Elmer Walton, City of Decatur

Bennett Bradley, Jr., Chairman, Macon County Board

Mayor Elvin Klaska, Village of Long Creek

William B. Cannon, President, Decatur Park District

Gary Gohen, President, Sanitary District of Decatur

Denene Wilmeth, Chairman, Decatur Plan Commission

Rex L. Brown, Chairman, Macon County Regional Planning Commission

Major James M. Burgess, Illinois Army National Guard

Bon Foster, Division of Aeronautics, Illinois Dept. of Transportation

Richard Lutovsky, Executive Director, Metropolitan Decatur Chamber of Commerce

Hobart Riley, Director, Macon County Regional Planning Commission

Robert J. Schowalter, Director, Decatur Airport

Charles Cherches, Director, Decatur Department of Community Development

John Vohs, Transportation Committee, Metropolitan Decatur Chamber of Commerce

Richard Statel, Transportation Committee, Metropolitan Decatur Chamber of Commerce

Paul Schomer, Schomer and Associates

Niels Herlevsen, Illinois Department of Energy and Natural Resources

As with many group efforts, the recommendations in this report did not receive the unanimous support of the participants. In this connection the Metropolitan Decatur Chamber of Commerce wishes to record its objection to the recommended changes in building, zoning and subdivision ordinances and the proposal for a noise disclosure ordinance.

This work provides a basis for an analysis of existing and potential land use conflicts and noise impact problems within the existing and forecasted noise exposure areas and consideration of measures for dealing with these problems.

Chapter 1 discusses the findings and recommendations of the entire report. Chapter 2 provides background information on aircraft noise abatement techniques. An examination of existing and future aircraft noise exposure around the Decatur Airport is provided in Chapter 3. Chapters 4 and 5 include recommended land use compatibility actions for reducing noise impacts and steps for implementing these actions.

Consistent with the concept of a demonstration project, it was anticipated that this Decatur work would produce results which might be useful in dealing with existing and potential noise exposure problems at other downstate Illinois airports. This potential is explored in Chapter 6.

Chapter 1

Summary of Findings and Recommendations

FINDINGS

1. Airport noise is not a serious concern today at the Decatur Airport. However, given the expected growth in aircraft operations and expansion of the airport coupled with the potential for continued urbanization around the airport, the potential exists for more serious noise exposure problems which could lend to conflicts between the airport and the community.
2. It is impossible to eliminate totally the noise generated by aircraft, but the negative effects of noise on people can be greatly reduced through coordinated, on-going efforts by federal, state and local public agencies including noise-impacted communities and airport operators and users.
3. There are three main techniques for reducing aircraft noise impacts: source noise reduction, airport and aircraft operating procedures, and land use compatability measures.
 - A. Source noise reduction involves controlling noise created by the aircraft itself. These efforts have focused on reducing engine noise by adding buffers or suppressors such as sound-absorbing materials on existing engines (retrofitting), on redesigning existing engines, and on developing entirely new engines or aircraft.

Source noise controls are the exclusive responsibility of the federal government. They were first mandated by Congress in 1968 and gradually have been made more stringent for new commercial and large business jets and expanded to cover all existing commercial jets.

Substantial progress has been made in reducing public noise exposure through source controls. During the past two to three decades, noise exposure has been reduced by 80 to 90 percent for long- and medium-range aircraft and 65 percent for short-range airplanes. With the completion of the retrofitting program on existing commercial jets and with the expanded use of new, quieter jets like the B-757, B-767, DC 10, L1011 and the A300 series, it is estimated that the number of persons in the United States exposed to aircraft noise levels of 65 LDN or greater will be reduced by 54 percent by the year 2000.

- B. Aircraft and airport operating procedures seek to reduce aircraft noise exposure through changes in the operation of the airport or aircraft. These procedures are the shared responsibility of the airport operator and the Federal Aviation Administration (FAA).

Airport related procedures can involve physical changes in the airport itself -- runways, taxiways, runup areas, noise barriers, etc. -- or they may involve restrictions on the users of the airport such as curfews and aircraft weight limitations.

Aircraft related procedures have the potential for quick results in terms of reduced noise exposure. However, they involve safety implications which can make them very controversial. These procedures include preferential runway use to direct aircraft away from residential areas, controls over aircraft takeoffs and landings to adjust aircraft altitude and power output, and flight paths designed to minimize noise impacts.

- C. Land use compatability measures are concerned with the use of land in noise impacted areas, the objectives being to minimize the number of people living in existing and potential noise exposure areas, and to minimize the negative noise impacts upon people already living in those areas.

There are two aspects to consider. One is to reduce noise impacts in already developed areas by retrofitting buildings with insulation to reduce interior noise or to relocate noise-sensitive uses. The second aspect is to prevent noise exposure problems in undeveloped areas by encouraging only noise-compatible uses.

Under current state law, land use compatability measures can be implemented only by local municipal and county governments through their zoning and building codes and other land use and development regulations.

4. Community attitudes toward airport noise must be considered in order to avoid serious conflicts between the airport and the community. National experience with community reactions to various noise levels helps to establish a basis for planning to avoid serious noise problems and conflicts at the Decatur Airport.
5. Two conditions can affect the applicability of the Decatur program to other downstate airports: (1) a selection of a different noise planning goal, and (2) a major difference in the severity of the noise problem.
6. Among the larger downstate airports Decatur is at the lower end of the spectrum in terms of the severity of existing and potential noise exposure problems.
7. Adaptation of the Decatur program for use at other downstate Illinois airports requires that the program be given greater breadth and depth to accommodate a range of airport noise environments and urbanization conditions.

RECOMMENDED PROGRAM

For planning purposes four noise exposure zones are delineated around the Decatur Airport. In order to describe present and expected future noise exposure, noise zones were delineated based upon 1982 airport operations and airport use expectations for the year 2000.

The two sets of noise exposure zones are shown in Figures 1 and 2.

The following summarizes the noise characteristics of the four noise zones and the recommended actions.

1. Noise Exposure Zone A

Noise Level: 70 LDN or greater

Noise Problem: Serious

Total Area in Zone: 1982 - 391 acres (all airport)

2000 - 500 acres (498 airport)

Potential Noise Exposure Problem Area: 52 acres of leased airport land

Recommendations:

Continue leased airport land in agricultural or other noise compatible use. If alternative uses are allowed, require noise insulation measures in offices and public areas to maintain suitable interior noise levels.

2. Noise Exposure Zone B

Noise Level: 65-70 LDN

Noise Problem: Nuisance

Total Area in Zone: 1982 - 236 acres (229 airport)

2000 - 593 acres (425 airport)

Potential Noise Exposure Problem Area:

327 acres of leased airport land

34 acres of land in residential use

10 acres of vacant/agricultural land zoned
for residential use.

Recommendations:

1. Continue leased airport land in agriculture or other noise compatible use.
2. Rezone 10 acres of land currently zoned county R-1 Residential for noise-compatible use.
3. Require sound insulation on all additions to, and reconstruction of, existing buildings.
4. Adopt and implement fair disclosure ordinance for all property transfers.

3. Noise Exposure Zone C

Noise Level: 60-65 LDN

Noise Problem: Annoyance

Total Area in Zone: 1982 - 1,977 acres (425 airport)

2000 - 2,274 acres (225 airport)

Potential Noise Exposure Problem Area:

166 acres of leased airport land

458 acres of land in residential use

389 acres of vacant/agricultural land

designated for residential use

Recommendations:

1. Continue leased airport land in agricultural or other noise-compatible use.
2. Require sound insulation construction standards on all new residential buildings.

3. Require sound insulation construction standards on all additions to, and reconstruction of, existing residential buildings.
4. Adopt and implement fair disclosure ordinance for all property transfers.

4. Noise Exposure Zone D

Noise Level: 60 LDN or less

Noise Problem: None

Recommendations:

The areas directly adjacent to the airport on the north and south which are currently zoned R-1 Residential under the County Zoning ordinance should be rezoned for noise-compatible uses as proposed in the comprehensive plans for Macon County and the City of Decatur.

5. Three recommendations are offered for broadening the Decatur program to make it applicable to other downstate airports:
 - A. The use of five rather than four noise impact zones to accommodate the more serious noise impact areas at larger airports.
 - B. The use of land use compatibility measures that distinguish between new development and "in-fill" development on by passed parcels in partially developed areas.
 - C. The use of a "condition" designation for selected types of new or "in-fill" developments so that review and approval by the local planning body would be required.

Chapter 2

Aircraft Noise Abatement

It is impossible to eliminate entirely the noise generated by aircraft. However, the negative effects of noise on people and the conflicts between an airport and its neighbors can be greatly reduced. There is no single technique or formula for achieving this reduction. A coordinated on-going program is required which involves federal, state and local public agencies, noise-impacted communities, and airport operators and users to ensure implementation of effective noise impact reduction techniques.

There are three main techniques for reducing aircraft noise impacts: source noise reduction, airport and aircraft operational procedures, and land use compatibility measures. The first two techniques are the responsibility of the federal government and the airport operator while the third must be implemented by the local communities affected by aircraft noise. Following is a more detailed discussion of the three techniques (U.S. Department of Transportation, Federal Aviation Administration, 1976).

Source noise reduction involves controlling noise created by the aircraft itself. Aircraft in flight generate noise from two sources: the engine and the airplane. The focus here is on engine noise. Efforts to quiet engine noise have centered around attempts to add buffers or suppressors such as sound-absorbing materials on existing engines (retrofitting) and on the redesign of existing engines and the development of entirely new engines or aircraft. During the past two to three decades, reductions in

noise exposure have approximated 80 to 90 percent for long- and medium-range airplanes and 65 percent for short-range airplanes through engine improvements (Von Kann, 1978).

Aircraft noise controls were mandated by Congress under the Federal Aviation Act of 1968. Under this Act, FAA was directed "to provide for the control and abatement of aircraft noise..." (Public Law 90-411). FAA has exercised its authority through Federal Aviation Regulations (FAR) Parts 36 and 91.

FAR 36 is an aircraft-type certification rule which establishes noise emission standards on all new commercial and large business jets (Federal Aviation Regulations Part 36). FAR 91 (the Fleet Noise Rule) extended noise emission standards to all existing commercial aircraft and requires conformance by January 1, 1985 (Federal Aviation Regulation Part 91). To protect air transportation service to smaller communities, compliance with the standards for two-engine aircraft with 100 seats or less was extended to January 1, 1988. Compliance with the Fleet Noise Rule can be achieved through retrofitting existing engines with acoustical treatment or by replacing noisy engines or aircraft with quieter types.

As a measure of the potential impact of these regulations, the USEPA has estimated that by the year 2000 the number of persons in the U.S. exposed to high noise levels of 65 LDN or greater will be reduced by 54 percent, from 5.6 million to 2.6 million persons, and the number exposed to very high levels of 75 LDN or more will be reduced 75 percent from 400,000 to 100,000 persons (U.S. Environmental Protection Agency, 1980).

Aircraft and airport operational procedures seek to reduce aircraft noise exposure through changes in the operation of the airport or aircraft. Many of these changes can be accomplished with existing aircraft and facilities with minimum modifications. These procedures are widely used in reducing noise impacts (U.S. Department of Transportation, Federal Aviation Administration, 1979).

The responsibilities at various levels of government for airport noise control have been defined through a series of court decisions. The federal government has exclusive authority over airspace use and management, air traffic control, safety and source noise regulation. Airport operators have authority to select airport sites; acquire land; and control airport design, scheduling and operations subject to constitutional prohibition against creation of an undue burden on interstate and foreign commerce, unjust discrimination, and interference with FAA responsibility over safety and airspace management. Increasingly, airport operators are being held responsible for any noise damages resulting from aircraft operations under the principle of inverse condemnation, although this principle has not been upheld by the courts in Illinois. Local governments have the power to protect their citizens from noise through land use controls and other police power measures affecting how the land is used in noise impact areas (Ducharme, 1981).

Procedures in this section can be grouped under two headings, those relating to the airport and those dealing with aircraft.

A. Airport Related Procedures

1. Airport Development - One group of airport-related procedures involves physical changes in the airport itself. These include

construction of new runways, taxiways and holding runup aprons or noise barriers to reduce or direct noise into more noise compatible areas.

2. Airport Operations - A second group of airport-related measures involves restrictions on the users by the airport proprietor to control the noise impact during certain times of day or to reduce the cumulative noise impact. These restrictions can be controversial because many involve legal determinations regarding unjust discrimination or undue burden on interstate or foreign commerce and have potential far-reaching consequences on the national air transportation system. Included in this group are curfews and other time-of-day operational limitations and limitations on noise levels or aircraft weight.

A curfew normally places restrictions on aircraft operations during the night hours (10 p.m. to 7 a.m.). Because the LDN noise metric incorporates a 10 to 1 weighting for all operations after 10 p.m. (that is, every night operation is considered equivalent to 10 daytime operations of the same aircraft), significant reductions in noise exposure can be achieved through imposition of a curfew. However, because of their potential economic ripple effects nationwide, curfews have caused serious concerns in the air transport industry and, consequently, they have not been used extensively in airport noise abatement planning.

Time-of-day operational restrictions usually limit certain types of aircraft activity, usually training or maintenance runups, to

specific time periods. A maximum noise level limitation limits the use of aircraft that produce unacceptable noise levels.

B. Aircraft Operational Procedure

This group of procedures has significant potential for an immediate redistribution and reduction of aircraft noise. However, because they involve the direct operation of the aircraft as well as the air traffic control system, alteration of either for noise abatement or any reason other than safety or efficiency can become controversial. Procedures which have been the most effective in reducing noise impacts include:

1. **Preferential Runway Use** - This procedure involves the use of specific runways which direct aircraft taking off or landing over less noise-sensitive areas. This procedure is subject to safety objections when operations are conducted on a runway which may not be the best aligned into the wind to reduce noise exposure. An informal procedure is currently in effect at Decatur Airport whereby the tower encourages pilots to avoid Runway 12 in landings and takeoffs to avoid noise impact on Decatur residents.
2. **Takeoff and Approach Profiles (vertical control)** - Profiles are adjusted in the cockpit by the pilot to place aircraft at desired altitudes with desired power output when they are over specific noise-sensitive areas. Profile adjustments are restricted by technical and safety considerations. The National Guard currently uses modified

landing and takeoff profiles for helicopters at Decatur Airport to reduce noise impacts.

3. Arrival and Departure Procedures (horizontal control) - These procedures direct aircraft over compatible land uses such as industrial areas or over uninhabited areas like rivers, lakes or agricultural areas, etc. They are controlled by FAA Air Traffic personnel based on safety and efficiency of operations and are subject to pilot acceptance.

Land use compatibility measures are concerned with the use of land in noise impact areas, the objective being to minimize the number of people living in existing and potential high noise exposure areas.

In contrast to other noise abatement strategies which are the responsibility of the federal government and the airport operator, land use compatibility planning is the exclusive authority and responsibility of local governments. Land use strategies must be implemented by municipal and county officials with responsibility for zoning, building and other development regulations in noise impact areas under current state legislation.

"Control of compatible land use around airports is a key tool in limiting the number of citizens exposed to noise impacts... no amount of Federal effort to control noise at the source (the aircraft) or through the use of designated airspace will reduce noise to acceptable levels. Immediate and productive land use control measures must be implemented at the local level to complement Federal efforts to achieve a livable environment," (U.S. House of Representatives).

There are two aspects to land use compatibility planning (Federal Interagency Committee on Urban Noise, 1980). One is to reduce noise impacts on existing land use. This can be accomplished by retrofitting existing buildings with insulation to reduce interior noise or by relocating noise sensitive uses such as residences away from high noise areas.

The second aspect of land use compatibility planning is concerned with undeveloped land. Noise impacts in these areas can be reduced by encouraging noise-compatible land uses in noise-sensitive areas through local zoning and other land use regulations.

Because of the high cost of converting existing land uses and retrofitting buildings to reduce interior noise levels, land use compatibility measures are the most costly and least effective technique for reducing aircraft noise impacts in developed areas. In undeveloped areas, land use compatibility measures are the least costly and most effective means for reducing adverse noise impacts.

The legal authority of Illinois municipalities and counties to use their zoning powers to prohibit residential and other noise-sensitive land uses near airports was researched recently and the following conclusions were drawn:

"Zoning for noise-compatible development around airports has not been addressed directly by the Illinois courts or the Illinois Assembly. However, it seems probably that local governments in Illinois may prohibit noise-sensitive uses in the area near airports through the exercise of either general statutory zoning authority or home rule powers. Such a local prohibition should be vulnerable to attack only if

there is no reasonable basis in part for the determination that the airports present and future noise levels would be incompatible with the physical or mental health of residential users of affected lands, or if there is no profitable nonresidential use of such land," (Findley and King, March, 1983).

Chapter 3

Existing and Future Aircraft Noise

Exposure at Decatur Airport

There are two key factors involved in assessing the present and future noise impact potential around the Decatur Airport. One factor is the boundaries of the noise impact area which are related to the present and estimated future number of operations (takeoffs and landings) by various types of aircraft, aircraft arrival and departure routes, and other aircraft- and airport-operating procedures. These noise boundaries or contours are drawn to reflect the sound levels (or noise impacts) produced within given areas. Noise impact areas at the Decatur Airport have been delineated (Schomer, 1982) which reflect 1982 and year 2000 airport operating conditions.*

The noise descriptor used is the average day-night sound level (abbreviated as LDN) expressed in decibels. For each of the operating scenarios the 70, 65 and 60 LDN noise contours are delineated. The two sets of noise contours are shown in Figures 1 and 2.

The second key factor in assessing noise impacts is present and future land use. Current noise impacts are measured in terms of the numbers of families and population exposed to different noise levels. A detailed land use survey was completed and tabulations were made on the acreage in each

* At the time the June 1982 contours were drawn, there actually were two daily DC-9 operations by Ozark Airlines, but the contours were drawn on the assumption that the DC-9 operations would be phased out altogether. This has in fact occurred and Ozark no longer operates at Decatur Airport. The year 2000 contours included in the Schomer report were subsequently revised by Schomer to reflect planned runway extensions. This revised contour is the one shown in Figure 2.

land use category in each noise exposure zone under 1982 and year 2000 operations. See Table 1.

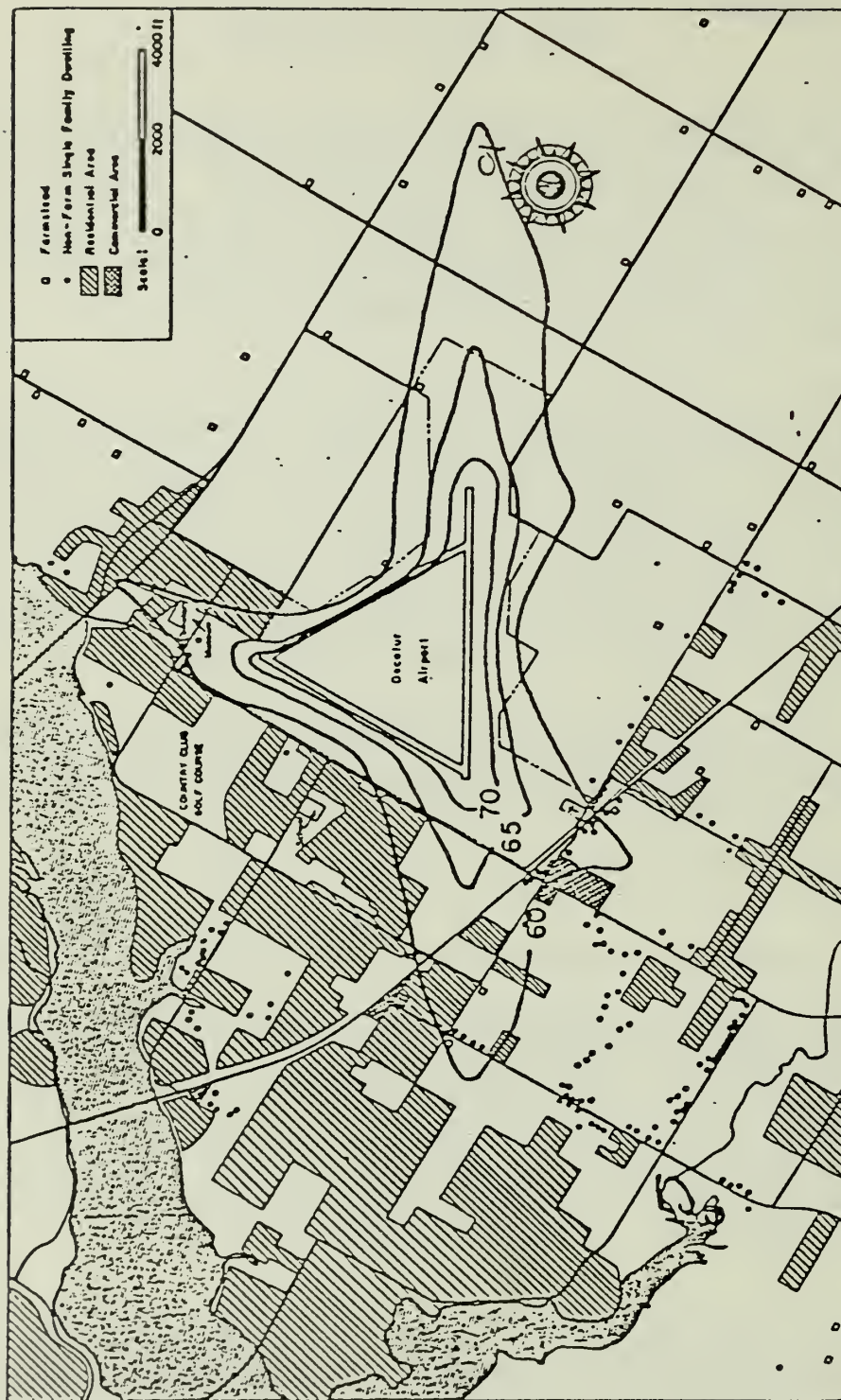
A count was then made of the number of existing housing units in the various noise zones from aerial photos and field checks. Housing units were converted to population estimates by assuming 3.0 persons per housing unit. Table 2 shows the calculations for 1982 airport operations.

The future noise impact potential was calculated for present and future airport operations. A three-step procedure was used to reflect the different levels of uncertainty relating to the estimates for different categories of land. The first category reflecting the highest degree of certainty is land already developed for housing. The counts of existing housing units and population for 1982 airport operations included in Table 2 were used and similar estimates were made for the three noise exposure areas for year 2000 operations.

The next category of land, reflecting a lesser degree of certainty, is the vacant land currently zoned for urban use under the Decatur or Macon County zoning ordinances. Data summarizing the current zoning under the Decatur and Macon counties zoning ordinances of vacant land in each noise exposure area under 1982 and year 2000 airport operations is shown in Table 3.

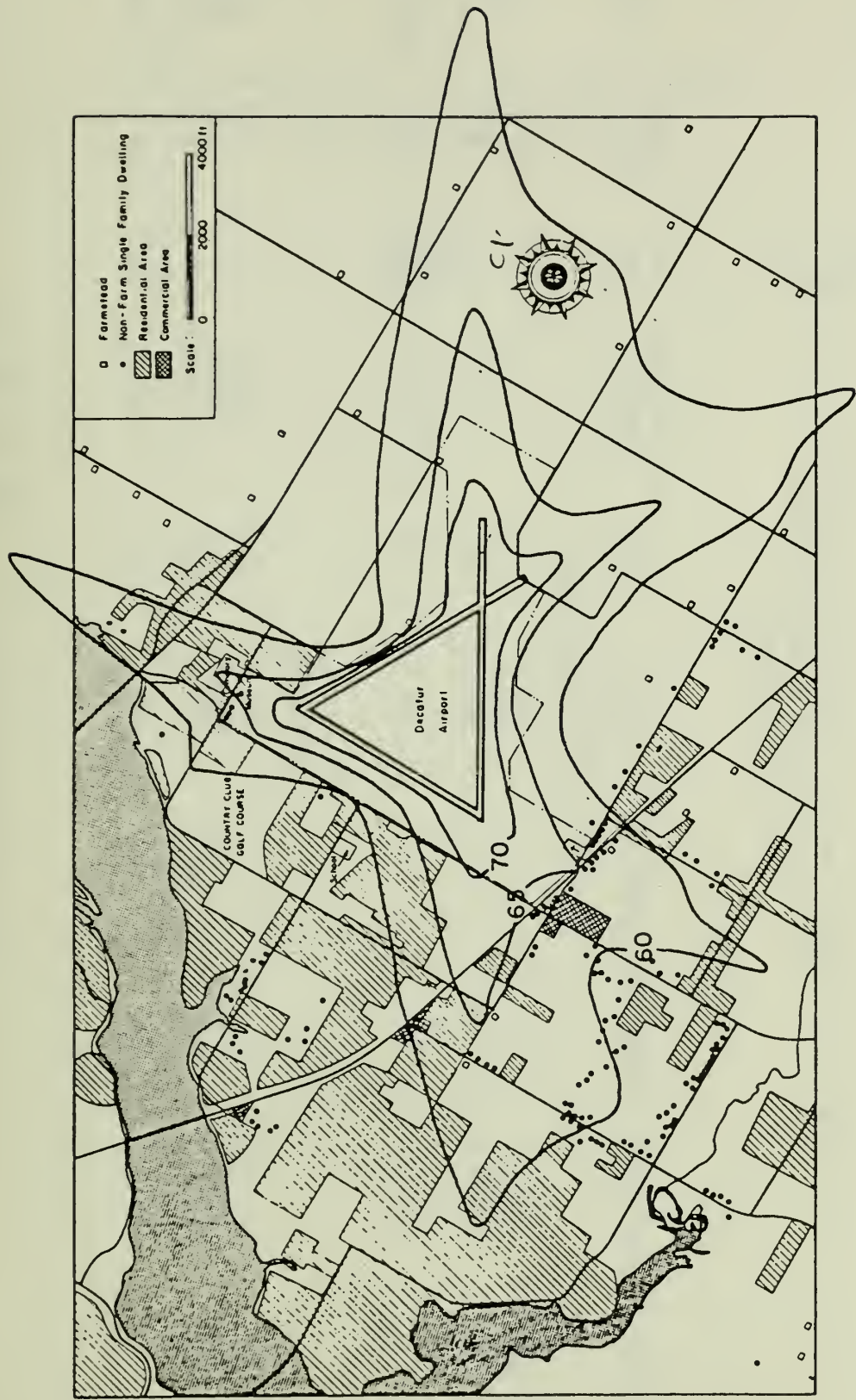
It is assumed that vacant land will be fully developed for those uses and at the densities currently specified under present zoning. Calculations showing the potential number of families and population for this category of land are shown in Table 4.

Figure 1
1982 Noise Contours in the
Vicinity of Decatur Airport



Source: Paul Schomer, 1983. Contours represent April 1982 aircraft and airport operations, assuming no DC-9 operations.

Figure 2
 Year 2000 Noise Contours in the
 Vicinity of Decatur Airport



Source: Paul Schomer, 1983.

Table 1

Existing Land Use in Noise Exposure Areas Around Decatur Airport.
1982 and Year 2000 Airport Operations
(Data in Acres)

| Noise Zone | Residential | Commercial | Industrial | Airport | Parks | Agriculture/ Vacant | RR Row | Street Row | Total |
|------------|----------------------------------|------------|------------|---------|-------|------------------------|-----------|---------------|---------|
| | <u>1982 - No DC-9 Operations</u> | | | | | | | | |
| > 70 LDN | ----- | ----- | --- | 391.0 | ---- | ----- | ---- | ----- | 391.0 |
| 65-70 LDN | 0.6 | ----- | --- | 228.6 | ---- | 2.2 | ---- | 4.5 | 235.9 |
| 60-70 LDN | 107.6 | 8.7 | --- | 355.1 | 8.0 | 427.2 | 9.5 | 58.2 | 974.3 |
| TOTAL | 108.2 | 8.7 | --- | 974.7 | 8.0 | 492.4 | 9.5 | 62.7 | 1,601.2 |
| | <u>Year 2000</u> | | | | | | | | |
| > 70 LDN | ----- | ----- | --- | 514.6 | ---- | 16.6 | ---- | 1.3 | 532.5 |
| 65-70 LDN | 34.2 | ----- | --- | 415.5 | 5.3 | 193.9 | 3.6 | 22.5 | 675.0 |
| 60-65 LDN | 460.2 | 34.0 | 1.0 | 224.6 | 45.6 | 1,714.5 | 10.1 | 171.1 | 2,661.1 |
| TOTAL | 494.4 | 34.0 | 1.0 | 1,154.7 | 50.9 | 1,925.0 | 13.7 | 194.9 | 3,868.6 |

Table 2

Existing Housing Units and Population in Noise
Exposure Areas Around Decatur Airport.
1982 Airport Operations

| | <u>Number Families</u> | <u>Estimated Population</u> |
|-----------|----------------------------|---------------------------------|
| > 70 LDN | --- | --- |
| 65-70 LDN | 1 | 3 |
| 60-65 LDN | 158 | 474 |
| All Zones | 159 | 477 |

The last category of land, which is the least predictable in terms of future use, is land currently zoned for agricultural use under the Macon County zoning ordinance. Future use of this land is presumed to be in accordance with the Decatur Official Comprehensive Plan adopted in December 1977 and the Macon County Comprehensive Plan Update - 1978. No residential densities are specified in the development plan maps so that in calculating the population exposure to various noise levels it was assumed that the densities would follow the pattern of presently zoned vacant land. Table 5 shows the estimated future number of families and population on this land in the various noise impact areas for 1982 and 2000.

The combined noise exposure potential for these three categories of land provides a picture of the total future noise exposure potential. The combined results are shown in Table 6. The table highlights the existing and potential noise exposure problems around the Decatur Airport. The data also enable us to assess the comparative impact of air traffic growth and urban expansion on increasing noise exposure.

Even if air traffic were to remain at the 1982 operations level, the number of people exposed to noise levels of 60 LDN or more would increase 75 percent (from 477 to 843) if the land currently zoned for residential use is developed to its full potential. The exposed population would more than triple from 477 to 1,626 if the agricultural land planned for residential use is also fully developed.

The year 2000 columns in Table 6 show the combined noise exposure potential from expected growth in air traffic and new urbanization. Even with no new urban growth, with the expected increase in air traffic, the

TABLE 3

Current Zoning of Vacant Land in Noise Exposure Areas Around Decatur Airport
Under 1982 and Year 2000 Airport Operations*

(Data in Acres)

| Noise Zone | Vacant Agricultural Area | DR1 | Decatur Zoning District | | | | DB2 | CA1 | County Zoning District | | | |
|----------------------------------|--------------------------------|-----|-------------------------|------|------|-----|------|--------|------------------------|------|------|-----|
| | | | DR2 | DR3 | DR6 | DB1 | | | CR1 | CR4 | CB1 | CM1 |
| <u>1982 - No DC-9 Operations</u> | | | | | | | | | | | | |
| 70 LDN | - | - | - | - | - | - | - | - | - | - | - | - |
| 65 - 70 LDN | 2.2 | - | - | - | - | - | - | 2.2 | - | - | - | - |
| 60 - 65 LDN | 433.2 | 0.5 | - | 8.0 | - | 1.0 | 5.1 | 334.2 | 80.9 | - | 2.7 | 0.8 |
| Total | 435.4 | 0.5 | - | 8.0 | - | 1.0 | 5.1 | 336.4 | 80.9 | - | 2.7 | 0.8 |
| <u>Year 2000</u> | | | | | | | | | | | | |
| 70 LDN | 16.6 | - | - | - | - | - | - | 16.6 | - | - | - | - |
| 65 - 70 LDN | 193.9 | - | - | - | 0.9 | - | - | 172.0 | 11.3 | - | 9.7 | - |
| 60 - 65 LDN | 1714.5 | 7.4 | 1.0 | 13.0 | 15.1 | 1.9 | 15.7 | 1318.7 | 289.5 | 20.0 | 30.9 | 1.3 |
| Total | 1925.0 | 7.4 | 1.0 | 13.0 | 16.1 | 1.9 | 15.7 | 1507.3 | 300.8 | 20.0 | 40.6 | 1.3 |

* The figures for this table were calculated from information taken from the "Zoning Ordinance of the City of Decatur, Illinois", May 19, 1980, Department of Community Development, and the "Comprehensive Amendment to the Macon County Zoning Ordinance," adopted August 14, 1979, Macon County Regional Planning Commission.

TABLE 4

Noise Exposure Potential on Vacant Land in Noise Exposure
Areas Around Decatur Airport, Currently Zoned for Urban Uses,
Under 1982 and Year 2000 Airport Operations*

| Item | 1982 No DC-9 Oper | Year 2000 |
|--|----------------------|--------------|
| Land Zoned for Urban Uses | 99.0 | 357.9 |
| Zoned for Business | 9.6 | 59.5 |
| Gross Area* | 72.0 | 243.8 |
| Net Area (80%) | 57.6 | 195.0 |
| R-1 (20,000 sq. ft.) area (83%) | 47.8 | 161.9 |
| R-1 potential families | 104.0 | 353.0 |
| R-2 (9,000 sq. ft.) area (0.3%) | - | 0.6 |
| R-2 potential families | - | 3.0 |
| R-3 (6,000 sq. ft.) area (4.3%) | 2.5 | 8.4 |
| R-3 potential families | 18.0 | 61.0 |
| R-4 (1 acre) area (5.4%) | 3.1 | 10.5 |
| R-4 potential families | 3.0 | 11.0 |
| R-6 (1,000 sq. ft.) area (6.7%) | 3.9 | 13.1 |
| R-6 potential families | 156.0 | 524.0 |
| Total Potential Families | 281 | 952 |
| Total Potential Population @ 3.0 persons/family | 843 | 2856 |

* Excludes acreage currently zoned R-1 under the Macon County Zoning Ordinance most of which directly adjoins the Airport which is proposed for light industrial use in the Decatur Comprehensive Plan as follows:

17.4 acres under 1982 - No DC-9 Operations

104.4 acres under Year 2000 Operations

* The figures for this table were calculated from information taken from the City of Decatur, "Official Comprehensive Plan," adopted December 12, 1971, Ordinance 77-223 Department of Community Development, and the "Comprehensive Plan Update," 1978, Macon County Regional Planning Commission.

Table 5

Noise Exposure Potential on Land Currently Zoned Agricultural
and Proposed for Residential Use in the Decatur Comprehensive
Plan in Noise Exposure Areas Around Decatur Airport
Under 1982 and Year 2000 Operations

(All Data in Acres)

| <u>Item</u> | <u>1982 No DC-9 Oper</u> | <u>Year 2000</u> |
|---------------------------------|------------------------------|----------------------|
| Total Area Zoned Agricultural | 336.4 | 1,507.3 |
| Area Zoned CR1* | 17.4 | 104.4 |
| TOTAL AREA | 353.8 | 1,611.7 |
| Proposed Use: | | |
| Agricultural | 203.5 | 1,090.5 |
| Industrial | 124.2 | 373.6 |
| Residential | 26.1 | 147.6 |
| Street Row (20%) | 5.2 | 29.5 |
| Net Res. Area | 20.9 | 118.1 |
| R-1 (20,000 sq. ft.) area (83%) | 17.3 | 98.0 |
| R-1 potential families | 38.0 | 214.0 |
| R-2 (9,000 sq. ft.) area (0.3%) | 0.1 | 0.4 |
| R-2 potential families | --- | 2.0 |
| R-3 (6,000 sq. ft.) area (4.3%) | 0.9 | 5.1 |
| R-3 potential families | 7.0 | 37.0 |
| R-4 (1 acre) area (5.4%) | 1.1 | 6.4 |
| R-4 potential families | 1.0 | 6.0 |
| R-6 (1,100 sq. ft.) area (6.7%) | 1.4 | 7.9 |
| R-6 potential families | 56.0 | 316.0 |
| Total Potential Families | 102 | 806 |
| Total Potential Population | 306 | 2,418 |

* This is acreage mostly adjoining the Airport which is proposed for light industrial use in the Decatur Comprehensive Plan.

Table 6

Future Noise Exposure Potential in Noise Exposure Areas Around Decatur Airport
Under 1982 and Year 2000 Airport Operations

| Category and Noise Impact Area | 1982 - No DC-9 Operations | | Year 2000 | |
|--|------------------------------|------------|-----------------------|------------|
| | Number of Families | Population | Number of Families | Population |
| Existing Development | | | | |
| 70 LDN Noise Area | --- | --- | --- | --- |
| 65-70 LDN Noise Area | 1 | 3 | 52 | 56 |
| 60-65 LDN Noise Area | 158 | 474 | 614 | 784 |
| Totals | 159 | 477 | 666 | 1,998 |
| Vacant Land Zoned Residential | | | | |
| 70 LDN Noise Area | --- | --- | --- | --- |
| 65-70 LDN Noise Area | --- | --- | 10 | 30 |
| 60-65 LDN Noise Area | 281 | 843 | 952 | 2,856 |
| Totals | 281 | 843 | 962 | 2,886 |
| Land Zoned Agricultural but Planned for Residential Use | | | | |
| 70 LDN Noise Area | --- | --- | --- | --- |
| 65-70 LDN Noise Area | --- | --- | --- | --- |
| 60-65 LDN Noise Area | 102 | 306 | 806 | 2,418 |
| Totals | 102 | 306 | 806 | 2,418 |
| All Categories | | | | |
| 70 LDN Noise Area | --- | --- | --- | --- |
| 65-70 LDN Noise Area | 1 | 3 | 62 | 186 |
| 60-65 LDN Noise Area | 541 | 1,623 | 2,372 | 7,116 |
| Totals | 542 | 1,626 | 2,434 | 7,302 |

noise exposure areas will expand to encompass a much larger number of people. Under year 2000, air traffic activity, the number of persons living within the 60 LDN contour area will total 1,998. This represents an increase of more than 300 percent over 1982. With new urbanization, the number of persons in the noise exposure area can be expected to increase even more dramatically. The full development of presently zoned vacant land would add an additional 2,886 persons within the 60 LDN noise exposure area, and the complete development of agricultural land planned for residential uses would add yet another 2,418 persons.

Thus, the combined impact of air traffic growth and new urbanization could increase the number of persons within the 60 LDN noise exposure area to more than 7,300 persons compared with around 477 today -- more than a 15-fold increase.

Having determined the existing and future aircraft noise exposure around the Decatur Airport, it will be useful to examine the noise zones in terms of who has jurisdictional responsibility over the land in these zones. For our purposes we will confine ourselves to the three jurisdictions that exercise zoning and other land use controls, namely Macon County in the incorporated areas, the City of Decatur and the Village of Long Creek.

Table 7 shows existing land uses by jurisdiction for the three noise zones combined under 1982 and Year 2000 airport operations.

A more detailed breakdown of the potentially developable land (the vacant/agricultural category) is shown in Table 8.

Figure 3 shows jurisdictional areas with the year 2000 noise impact areas. The data highlight the importance of the airport's aggressive land acquisition program in controlling existing and future noise impacts around the airport. Nearly two-thirds (65.1 percent) of the land within the 1982 60 LDN or greater noise areas is in airport ownership. With the expected expansion of air traffic and the airport by the year 2000, the percentage will be reduced, but it will still total around 30 percent.

It should be noted that the large amount of undeveloped land under Macon County jurisdiction (94 percent) does not mean that the County will actually exercise control over its development. In order to develop their land, developers have had to annex their tracts to the City of Decatur to receive sewer and water facilities and other municipal services. This practice will ver likely continue so that future development will probably occur under municipal rather than county regulations.

Table 7

Existing Land Use by Jurisdiction
All Noise Zones, Decatur Airport
(Data in Acres)

| <u>Land Use and Jurisdiction</u> | <u>1982 No DC-9 Operations</u> | <u>Year 2000</u> |
|--------------------------------------|------------------------------------|----------------------|
| Residential Total | 108.2 | 494.4 |
| Decatur | 54.1 | 209.8 |
| Long Creek | 2.5 | 12.4 |
| Macon County | 51.6 | 272.2 |
| Commercial/Industrial | 8.7 | 35.0 |
| Decatur | 6.7 | 23.0 |
| Long Creek | --- | 4.1 |
| Macon County | 2.0 | 7.9 |
| Parks | | |
| Decatur | 8.0 | 50.9 |
| Agricultural/Vacant | 362.4 | 1,925.0 |
| Decatur | 15.0 | 54.7 |
| Long Creek | 3.9 | 54.1 |
| Macon County | 343.5 | 1,816.2 |
| RR & Street Row | 72.2 | 208.6 |
| Decatur | 27.9 | 95.1 |
| Long Creek | 1.2 | 3.0 |
| Macon County | 43.1 | 110.5 |
| Totals (non airport) | 559.5 | 2,713.9 |
| Decatur | 111.7 | 433.5 |
| Long Creek | 6.4 | 73.6 |
| Macon County | 441.4 | 2,206.8 |
| Airport Land* | 1,044.7 | 1,154.7 |
| Total Land | 1,604.2 | 3,868.6 |

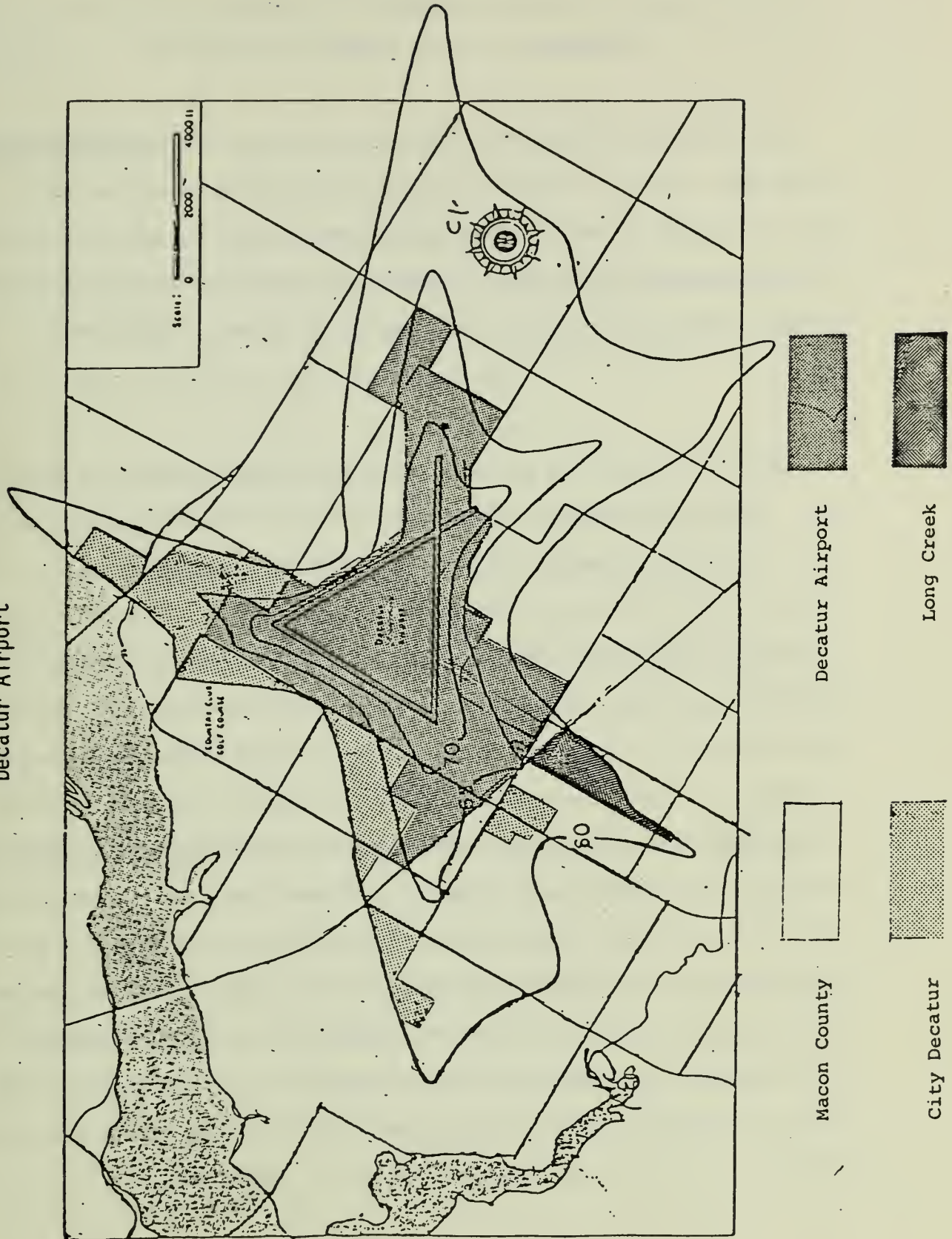
* Does not include 21.5 acres of airport land outside the 60 LDN noise exposure area. Total airport ownership is 1,176.2 acres.

Table 8

Vacant/Agricultural Land by Current
Zoning Jurisdiction, All Noise Zones, Decatur Airport
(Data in Acres)

| <u>Jurisdiction and Land Use</u> | <u>1982 No DC-9 Operations</u> | <u>Year 2000</u> |
|--------------------------------------|------------------------------------|----------------------|
| Decatur | | |
| Total Vacant/Ag. | 15 | 55 |
| Zoned Residential | 9 | 37 |
| Zoned Comm./Ind. | 6 | 18 |
| Long Creek | | |
| Total Vacant/Ag. | 4 | 54 |
| Zoned Residential | 4 | 23 |
| Zoned Agricultural | -- | 31 |
| Macon County | | |
| Total Vacant/Ag. | 349 | 1,816 |
| Zoned Residential | 77 | 230 |
| Zoned Agricultural | 268 | 1,544 |
| Zoned Comm./Ind. | 4 | 42 |
| All Jurisdiction | | |
| Total Vacant/Ag. | 368 | 1,925 |
| Zoned Residential | 90 | 290 |
| Zoned Agricultural | 268 | 1,575 |
| Zoned Comm./Ind. | 10 | 60 |

Figure 3
Generalized Jurisdictional Areas in Year 2000 Noise Impact Zones Around
Decatur Airport



Chapter 4

Recommended Land Use Compatibility Measures

For planning purposes, four noise exposure zones are delineated around the Decatur Airport to identify the land areas exposed to various noise levels. In order to describe the present and expected future noise exposure, the noise zones were determined based upon current 1982 airport operations and the airport operational levels expected in the year 2000 (Schomer, 1983).

The two sets of noise exposure zones are shown on the maps in Figures 1 and 2. Table 9 summarizes existing and potential noise exposure in the various noise zones in terms of present and projected land use.

The 60 LDN and higher noise impact area has been selected to define the planning area even though the more commonly used threshold is 65 LDN. One important factor in the selection of a noise planning threshold is the amount of background noise in a community, which influences how much noise conditioning people have, and general community noise attitudes and responses. Background noise represents a composite of sounds from a variety of sources (auto and truck traffic, construction activities, etc) and generally increases with the size of the community. In the vicinity of Decatur Airport the background is relatively quiet and consequently aircraft noise can be more noticeable and disruptive. For this reason it was felt that attention should be directed to the noise impact area encompassed by the 60 LDN noise contour.

Following is a description of each zone, a discussion of existing and potential noise exposure problems, and recommended actions for dealing with these problems.

Noise Exposure Zone A

With aircraft noise exposure of 70 LDN or more, Zone A has the most serious noise problem. This area is affected by both takeoffs and landings. Since it is so close to the airport, noise impacts cannot be reduced through changes in airport or aircraft operating procedures.

Existing and Potential Noise Problems - Existing and potential land use in this area are shown in Table 9. Fortunately, the entire 391 acres currently within the 70 LDN noise zone under 1982 operating conditions is airport-owned property. With the expansion of aircraft activity, the 70 LDN area will expand to 533 acres in 2000, but 515 acres will still be under airport ownership and control. Sixty-seven acres of airport land is currently leased for agricultural use.

Recommended Actions - Land use compatibility measures will be required in this area only in the event that the airport considers alternative uses on the 67 acres it currently leases for agriculture. There is not much likelihood that this will occur, but since the existing and potential noise intensity in this area is serious and permanent, only non-noise-sensitive land uses such as industrial type uses should be considered and even in these instances, appropriate sound insulation measures should be required in offices, public gathering places and other noise-sensitive areas.

TABLE 9

Existing and Potential Noise Exposure
in Noise Zones Around
Decatur Airport

(Data in Acres)

| | Noise Zone A 70 LDN | | Noise Zone B 65-70 LDN | | Noise Zone C 60-65 LDN | | All Noise Zones | |
|------------------------|---------------------------|--------------|---------------------------|--------------|---------------------------|--------------|--------------------|------|
| | 1982 No. DC 9 Oper. | Year 2000 | 1982 No. DC 9 Oper. | Year 2000 | 1982 No. DC 9 Oper. | Year 2000 | | |
| Total Land Area | 391 | 533 | 236 | 675 | 977 | 2661 | 1604 | 3869 |
| Airport Land | 391 | 515 | 229 | 416 | 425 | 225 | 1045 | 1155 |
| Non-Airport Land | 0 | 18 | 7 | 260 | 552 | 2436 | 559 | 2714 |
| Developed Land | - | 1 | 5 | 66 | 192 | 710 | 197 | 777 |
| Residential | - | - | 1 | 34 | 107 | 458 | 108 | 492 |
| Com./Ind. | - | - | - | - | 9 | 35 | 9 | 35 |
| Other | - | 1 | 4 | 32 | 76 | 217 | 80 | 250 |
| Vacant/Agricultural | - | 17 | 2 | 194 | 360 | 1726 | 362 | 1937 |
| Potential Residential | - | - | - | 10 | 98 | 389 | 98 | 399 |
| Potential Com./Ind. | - | - | - | - | 134 | 374 | 134 | 374 |
| Potential Agricultural | - | 17 | 2 | 184 | 128 | 963 | 130 | 1164 |

Note: Detail may not add to totals due to rounding.

Noise Exposure Zone B

With average annual noise levels between 65 and 70 LDN, aircraft noise exposure problems in Zone B can be considered a nuisance. Noise in this area can regularly interfere with speech.

Existing and Future Noise Problems - As noted in Table 10, nearly all (97 percent) of the 236 acres of the Zone B impact area is owned by the airport. By the year 2000 the total land area in Zone B will increase to 675 acres, with airport land totaling 416 acres, or 62 percent of the total. Of the 416 acres of airport land the airport currently has 325 acres under lease for farming. Of the 260 acres of non-airport land, 66 acres is already developed, and 194 acres is in the vacant/agricultural category.

All but approximately 10 acres of the 194 acres of vacant/agricultural land in Zone B is located in areas where there is little likelihood of any development pressure over the next 20 years.

Thus, both existing and potential noise exposure problems in Zone B have been greatly reduced through the far-sighted land acquisition program of the airport.

Recommended Actions - Only limited action will be required to ensure land use compatibility in Zone B, due to the large acreage owned by the airport. The 325 acres leased by the airport for farming should be continued in that noise-compatible use. In the event that alternative uses are

considered, only commercial and industrial uses should be allowed in order to minimize noise exposure.

Additional measures will be needed to protect the 10 acres of vacant land in the zone that is likely to be developed. New residential uses should be excluded from Zone B. Action should be taken by Macon County to rezone from R-1 Residential to Agricultural or Commercial the 10-acre parcel of land in Zone B in the block bounded by Route 36, Ment Drive, Maryland Avenue and Eldorado School Road.

The 66 acres of currently developed land in Zone B includes 34 acres in residential use. Noise attenuation construction standards should be required on any additions to these properties and on the entire structure if major reconstruction is undertaken to achieve suitable interior sound levels.

Noise Exposure Zone C

Zone C is exposed to aircraft noise of 60 to 65 LDN. Public reaction may be evident only in areas affected by frequent operations. In this zone aircraft noise can be categorized as annoying but not a nuisance. Noise exposure should be of some concern, but enough insulation can be provided through common building construction to make the indoor environment satisfactory for sleeping. The outdoor environment should be satisfactory for recreation and play.

Existing and Potential Noise Problems - Table 10 shows existing and potential noise exposure problem. The 1982 noise exposure area totals 977

acres of which 425 acres, or 43 percent, is airport land. Of the 552 acres of non-airport land, 37 percent or 192 acres is currently developed with a little over half (102 acres) in residential use. Vacant/agricultural area totals 360 acres, with 27 percent (98 acres) planned for residential use, 37 percent (134 acres) planned for commercial or industrial use and the remaining 36 percent (128 acres) to remain in agricultural use.

With the projected increase in aircraft operations, the total area in noise Zone C increases by 172 percent to 2,661 acres in 2000. Due to the expansion of the other noise zones, the amount of airport land will shrink to 225 acres, or only around 8 percent of the total. Nearly three-fourths of the airport land (160 acres) is currently leased for agriculture. The remaining 2,436 acres represents the major potential noise exposure problem area. A little less than one-third (710 acres) of the non-airport land is already developed with 65 percent (458 acres) residential, 5 percent (35 acres) commercial and industrial, and 30 percent (217 acres) in other uses.

Future noise exposure potential will also increase with the urbanization of part of the 1,726 acres of vacant/agricultural land in Zone C. Approximately 23 percent of this land (389 acres) is planned for residential use, 22 percent (374 acres) for commercial and industrial use. The remaining 33 percent (576 acres) is planned for continued use for agriculture.

Recommended Actions - Land use compatibility measures in the form of sound insulation measures are already provided by the construction standards incorporated in local building codes. These standards produce an

exterior-to-interior sound level reduction of approximately 20 decibels and thus provide adequate noise protection for residences and other more sensitive uses in the zone.

Noise Exposure Zone D

In Zone D with aircraft noise exposure of less than 60 LDN, aircraft noise would blend into the daytime noise environment and no negative effects from aircraft operations would result. There are, however, several areas directly adjacent to the airport on the north and south which are currently zoned for R-1 Residential under the county zoning ordinance and which could be considered for rezoning. The residential zoning classification is not consistent with the county's proposed use of this area as "airport expansion area" under the County Comprehensive Plan, or with Decatur's designation of the area for light industrial use under its Comprehensive Plan. Also, because of the proximity of these areas to the airport, small unforeseen changes in airport operations could place these areas into a higher noise zone. Removal of the R-1 Residential zoning designations on this land would provide greater consistency with the county and city plans and avoid possible future noise exposure problems.

Additional Recommendations - In addition to the actions proposed in the various noise zones, it is recommended that fair disclosure (or truth in sales) ordinances be adopted by local governments with home rule power to ensure that prospective property owners in all noise impact areas are fully aware of existing and potential noise exposure levels and any requirements

for sound insulation. Provision should be made for attaching a noise disclosure statement to the deeds on all properties within the year 2000 60 LDN or greater noise exposure area.

The legal authority of local governments which have home rule power to adopt fair disclosure ordinances was researched in a recent study by Professor Findley and Daniel King.

Their conclusions were as follows:

"It appears that local governments which have home rule powers... have the authority to enact ordinances requiring residential property owners, and their agents, to disclose aircraft noise levels to prospective buyers and leasees. There does not appear to be any basis for non-home rule governments to enact general disclosure requirements; however, non-home rule communities probably are able to require that subdivision developers provide notice of aircraft noise conditions to the initial residents of the development, and such communities might be able to require that written notices of aircraft noise conditions be posted on all residential buildings," (Findley and King, May 1983).

Finally, it is recommended that the airport operator continue the present noise mitigation aircraft operations procedures and complete its land acquisition program in order to help reduce existing and potential noise exposure in all noise zones.

For easy reference regarding specific land uses, the above recommendations are shown in a typical land use compatibility matrix in Table 10. This table shows the recommended status for detailed categories of land uses in each of the three noise impact zones. The recommendations apply only to new development.

Table 10

Recommended Status of New Land Uses in
Noise Impact Zones at Decatur Airport

| <u>Land Use Type</u> | <u>Noise Exposure Zone</u> | | |
|---|----------------------------|------------------|------------------|
| | A | B | C |
| | <u>70 LDN</u> | <u>65-70 LDN</u> | <u>60-65 LDN</u> |
| 1. Residential | | | |
| A. Single & 2-family, mobile homes | N | N | Y |
| B. Multi-family apartments, rooming houses, etc. | N | Y* | Y |
| 2. Educational and Medical | | | |
| Schools, libraries, churches, hospitals & nursing homes | N | N | Y |
| 3. Cultural, Entertainment, Recreation | | | |
| A. Indoor | N | N | Y |
| B. Outdoor | N | Y | Y |
| 4. Office Commercial Retail | N | Y | Y |
| 5. Manufacturing, Warehousing | Y* | Y | Y |
| 6. Transportation, Communication, Utilities | Y | Y | Y |
| 7. Resources Production and Extraction | Y | Y | Y |

Note: See attached notes for expanded list of land uses.

Y means use compatible with noise zone

N means use not permitted in noise zone

Y* means use should be permitted only with sound insulation in offices, public gathering areas and other noise-sensitive areas.

The (Y) designation means that the specific use is compatible with the noise zone, (Y*) means that the use is permitted only with appropriate sound insulation and (N) means that the use is not permitted.

Notes to Table 10.

The following land uses from the Standard Land Use Coding Manual (SLUCM) are included in each of the categories listed in Table 11. Numbers in parenthesis refer to SLUCM land use code numbers. (X) means the use in a past of the category shown.

1A. Residential

(11.1) Single Units, (11.2) Two units, (14) Mobile Home Parks.

1B. Residential

(11.3) Apartments (12) Group quarters (13) Residential hotels
(15) Transient lodging, (16) Other residential.

2. Educational, Religious, Medical

(68X) Schools and Libraries (71X) Churches, (65.1) Hospitals
(65X) Nursing homes

3A. Cultural, Entertainment, Recreation - Indoor

(71X) Cultural activities (71.2) Nature exhibits, (72) Public assembly
(72.1) Auditoriums, concert halls (72.11) Outdoor musicshells and
amphitheaters.

3B. Cultural, Entertainment, Recreational - Outdoor

(72.2) Outdoor sports arenas, spectator sports, (73) Amusements
(74) Recreational activities (incl., golf courses, riding stables,
water recreation) (75) Resorts and group camps (76) Parks (79) Other
cultural, entertainment recreation.

4. Office Commercial Retail Services.

(60-69) Services, (except schools, libraries, hospitals, contract
construction) including finance, insurance and real estate; personal
business, repair and professional services, medical services: govern-
ment and miscellaneous services, (52-59) retail trade.

5. Manufacturing and Warehousing

(20-35) Manufacturing, (51X) Warehousing (66) Contract construction
services.

6. Transportation, Communications, Utilities

(40-46) Transportation (47) Communication (48) Utilities (49) Other
transportation, communication, utilities.

7. Resource Production and Extraction.

(81-82) Agriculture (83) Mining (89) Other resource production and
extraction.

Chapter 5
Implementation Program

The responsibility for implementing the recommendations in Chapter 4 lies with the affected local governments having jurisdictional responsibility in existing and future noise impact areas around the Decatur Airport. These include:

Decatur Park District (Airport Operator)
Macon County
City of Decatur
Village of Long Creek

Actions required by the various affected local governments to implement the program include the following:

1. The affected local governments should adopt this program and commit themselves to taking appropriate action for its implementation.
2. Macon County, Decatur and Long Creek should take steps to implement the land use compatibility actions recommended in the various noise exposure zones as follows:
 - a) Macon County, Decatur and Long Creek should amend their building codes as appropriate to require construction standards on new buildings and an addition to existing buildings and on reconstructed existing buildings to achieve suitable interior sound levels. Standardized construction methods, designs and materials should be developed cooperatively by the various local governments for achieving specified levels of noise reduction.

- b) Macon County, Decatur and Long Creek subdivision regulations should be amended to require that in areas where existing and potential noise levels are 60 LDN or greater accoustical treatment as specified in the local building code be required as a condition for approval for all residential subdivisions.
 - c) Macon County should rezone the currently zoned R-1 Residential property adjoining the airport on the north and south to conform to the comprehensive plans of the county and the City of Decatur.
- 3. Macon County, Decatur and Long Creek should establish procedures for disclosing the degree of noise exposure to prospective property purchasers in all areas with a projected year 2000 noise level of 60 LDN or greater. This can be accomplished through the adoption of "right to know" ordinances which require written notification from seller informing the buyer of existing and potential noise levels on the property and of any sound insulation requirements.
 - 4. The airport operator should continue to implement airport operational procedures for noise impact abatement and continue its land acquisition program.
 - 5. The affected local governments should cooperate with other local, state and federal agencies in the implementation of this program.
 - 6. The affected local governments should participate with other implementing agencies in monitoring the effectiveness of the program and in reviewing and updating the program to reflect changing conditions.

7. The affected local governments should encourage and support continued federal and state action to reduce source noise and to support local voluntary noise impact mitigation efforts.
8. An ongoing committee should be established under the leadership of the Decatur Park District or airport operator involving representatives from the various local implementing governments and airport users which would be responsible for monitoring implementation of the program. The committee could provide a liaison with state and federal officials and could also initiate periodic revisions and updates in the program in response to changing local conditions and serve as a coordinative body in these efforts. Should the state choose to play a more supportive role along the lines indicated below, state representation on this committee would probably be appropriate.

Chapter 6

Applicability of Decatur Program to Other Downstate Airports

This chapter considers the factors that could affect the applicability of the Decatur program to other downstate Illinois airports and the changes needed in the Decatur program to make it more generally applicable.

On the surface we would expect airport noise environments, land use compatibility conflicts and noise impact problems to vary from one downstate airport to another due to obvious differences in the types of aircraft using the airports, the scale of operations and their location with respect to urbanization. Wide differences in the potential growth in the volume and types of aircraft operations and in urbanization patterns and trends in surrounding areas will perpetuate these differences in the future.

To What Extent is the Decatur Program Applicable to Other Downstate Illinois Airports?

There are two conditions which could require changes to fit other airports: (1) the choice of a different local noise planning goal, and (2) a major difference in the severity of existing and potential noise exposure problems.

Choice of Noise Planning Goal

In Decatur the noise planning goal was selected at 60 LDN and the noise impact planning area was defined to include the land area encompassed by the 60 LDN contour. More commonly the 65 LDN area is used, although in some instances the 55 LDN level is used. The selection of an airport noise planning goal is a matter of local choice based upon local preferences, balanced against the cost of achievement. One important factor in the decision is the amount of background noise in a community, which influences how much noise conditioning people have, and general community noise attitudes and responses. Background noise represents a composite of sounds from a variety of sources (auto and truck traffic, construction activities, etc.) and generally increases with the size of the community. In the vicinity of Decatur Airport the background is relatively quiet and consequently aircraft noise can be more noticeable and disruptive. For this reason attention is directed to the larger noise impact area encompassed by the 60 LDN noise countour.

The choice of noise planning goal has obvious implications in terms of size of the planning area. The data below show the differences in the sizes of the 60 and 65 LDN noise impact areas at the three Illinois airports. As indicated the 60 LDN area is in the range of 2.5 to 3.5 times as large as the 65 LDN area, thus raising questions of feasibility and cost.

| <u>Airport</u> | Land Area Within Contour Area (Acres) | | Ratio 60/65 |
|----------------|--|---------------|----------------|
| | <u>65 LDN</u> | <u>60 LDN</u> | <u>60/65</u> |
| Bi-State Parks | 1279 | 3747 | 2.9 |
| Decatur | 1108 | 3869 | 3.5 |
| Quad Cities | 2816 | 6992 | 2.5 |

Severity of Noise Exposure Problems

The second important factor affecting the transferability of the Decatur program relates to the relative seriousness of the noise exposure problem at other airports. Decatur does not have a serious airport noise problem now and, compared with other airports, potential future noise exposure problems are likely to be relatively small. There are a number of factors which have influenced the noise environment at Decatur Airport, most of which have had the effect of slowing the rate of urbanization, thereby reducing the number of persons exposed to aircraft noise. Some of these factors are unique to the Decatur Airport while others may have affected other downstate airports in varying degrees. These factors include:

1. The Decatur Airport is on the edge of the urban expansion area around the City of Decatur. Development pressures near the airport have been primarily from the west. A large portion of the land north, east and south of the airport is in agriculture and is not likely to experience development pressures before the year 2000.
2. Development pressures in the airport area generally are reduced because Decatur is not hemmed in by other incorporated communities and alternative annexation and development options exist to the north, west and south of the city.

3. Development pressures west of the airport have been reduced due to serious drainage problems.
4. The airport has had a very active and far-sighted land acquisition program. Current airport ownership totals 1,176 acres, of which 580 acres, or 49 percent, is leased out for farming. This additional land not only provides for the future expansion needs of the airport, but also greatly reduces the present and future noise potential, especially in the high noise areas.
5. Many of the land development and zoning conflicts evident between cities and counties in many urbanizing areas apparently do not exist between Macon County, Decatur and Long Creek. Developers have only one option in developing land around the Decatur Airport; they must annex to a municipality that can provide sewer and water facilities and other community services. The absence of municipal-county competition and conflict results in a more orderly development pattern and reduced noise exposure.
6. While not unique to the Decatur area, development pressures in the airport area have been significantly reduced in recent years as a result of a declining growth rate and the impact of high interest rates and economic recession.
7. The federal deregulation of U.S. airlines in 1978 has resulted in a shift to smaller and quieter aircraft at Decatur with the result that noise levels around the airport have been reduced.

Probably the most important of these factors have been the relative isolation of the airport with respect to present and future urbanization, the airport proprietor's land acquisition program and airline deregulation. The former two have operated to reduce the number of noise-sensitive uses in the noise impact areas and the latter has reduced the size of the noise impact areas.

The combined impact of deregulation and airport land ownership on existing and future noise at Decatur airport can be seen in the following data:

| <u>Noise Zone</u> | <u>Land Area (Acres)</u> | | | <u>% Airport Land</u> | | |
|-------------------|--------------------------|--------------|--------------|-----------------------|-------------|-------------|
| | <u>1978</u> | <u>1982</u> | <u>2000</u> | <u>1978</u> | <u>1982</u> | <u>2000</u> |
| 70 LDN | 620 | 391 | 533 | 82 | 100 | 97 |
| 65-70 LDN | 941 | 236 | 675 | 27 | 97 | 62 |
| 60-65 LDN | n.a. | 974 | 2661 | n.a. | 36 | 8 |
| All Zones | | <u>1,601</u> | <u>3,869</u> | | <u>61</u> | <u>30</u> |

n.a. - not available

Under the impact of deregulation, land area within the 70 LDN contour area declined by 37 percent, and within the 65-70 LDN area by 75 percent from 1978 to 1982. The airport now owns all of the land within the 70 LDN noise contour compared with 82 percent in 1978, and it owns 97 percent of the land in the 65-70 LDN area compared with only 27 percent in 1978.

The impact of the airport's location in relationship to urbanization patterns and trends can be seen in the following data from Decatur on existing and future year 2000 urbanization within the 60 LDN noise contour area.

| | <u>1982</u> | | <u>2000</u> | |
|-----------------------|--------------|----------|--------------|----------|
| | <u>Acres</u> | <u>%</u> | <u>Acres</u> | <u>%</u> |
| Total Nonairport Land | 626 | 100 | 2714 | 100 |
| Urbanized Land | 422 | 67 | 1623 | 60 |
| Agricultural Land | 204 | 37 | 1091 | 40 |

As indicated, 40 percent of the nonairport land in the year 2000 noise impact area is designated for agricultural use and is beyond the range of expected urban development in the foreseeable future.

Downstate airports more in the midst of existing and future urbanization, and that generate more noise due to higher air traffic volumes or noisier aircraft, and that have less extensive land holdings can be expected to have more serious existing and potential noise exposure problems, especially in the higher noise impact area of 65 LDN and over.

The range in acreage within the 65 LDN area at seven downstate airports for which current information is available attests to the wide range in noise exposure situations as well as to the fact that Decatur is at the lower end of the scale with a relatively small exposure area. The acreages are as follows:

| | |
|--------------------------------|--------|
| Springfield - Capital | 14,410 |
| Wheeling - PalWaukee | 3,650 |
| Moline - Quad Cities | 2,690 |
| West Chicago - DuPage | 1,060 |
| East St. Louis - Bi-State | 940 |
| Decatur | 630 |
| Carbondale - Southern Illinois | 530 |
| Waukegan | 300 |

The recommendations on land use restrictions and sound insulation requirements in the Decatur program would be appropriate in similar noise zones in these communities. However, additional program elements will be needed in those situations where existing and future noise impact areas are much larger and encompass more noise-sensitive land uses. Typically, in these situations there will also be 75 LDN and 80 LDN noise exposure areas where the noise impacts are much more severe and where special types of actions not needed in the Decatur situation will be required.

Airports with noise impact areas larger than 65 LDN and having the potential for urbanization should consider land use compatibility measures that distinguish between new developments on large vacant tracks and in-fill development and reconstruction or additions to existing structures. In-fill developments involve by-passed vacant lots or small parcels of land in partially developed areas. Special treatment is appropriate in these areas because the land use pattern is generally fixed and alternative land uses are more limited.

The land use/airport noise compatibility program of the Twin Cities Metropolitan Council provides an example of how in-fill development and reconstruction and additions to existing structures can be noise-protected while at the same time giving recognition to the special circumstances involved. While this concept was designed to accommodate the unique statutory regional planning responsibilities of the Council it can readily be adapted for community use in Illinois.

The concept makes use of the "conditional use" or "special use" idea in local zoning ordinances. Greater flexibility is built into the land use compatability program through a procedure requiring a detailed evaluation of selected development proposals in terms of the specific circumstances of the property vis-a-vis existing and potential aircraft noise impacts. This would be accomplished through the designation of certain noise-sensitive in-fill developments, or building reconstruction or additions as conditional uses in certain noise impact areas. With a "conditional" designation the particular proposal would have to be reviewed by the local planning agency in terms of existing and future noise impacts and whether any special noise alleviation measures were required as a condition for approval.

Adaptation of the Decatur program for use at other downstate Illinois airports thus requires that the program be given greater breadth and depth to accomodate a range of airport noise environments and urbanization conditions. The program described below has been designed with that objective in mind.

Recommendations for Local Governments

For planning purposes, five airport noise exposure zones are delineated based upon different levels of noise exposure. Following is a general description of each area in terms of the severity of the noise problem and the general types of preventative and corrective land use compatibility measures required in each zone.

Noise Exposure Zone A

Zone A includes the airport itself and the immediate surrounding area. At the larger airports this is the area described by the 75 LDN noise contour. Noise exposure in this zone can be described as severe. The zone is regularly affected by both landing and takeoff operations, and because of its close proximity to aircraft operations, little can be done to provide relief through changes in airport and aircraft operations.

Because existing and future noise exposure is severe and permanent, high priority should be given to acquisition in fee simple of as much of this land as possible to place it under permanent airport ownership and control. This will also help to insure that land is available for future airport expansion. Only the most non-noise-sensitive land uses should be permitted in the zone.

Certain categories of new developments such as outdoor cultural entertainment, education, medical facilities and recreational uses, because of their wide diversity in terms of noise sensitivity, should be considered for approval only on a conditional case by case basis by the local planning agency. Other less noise-sensitive uses can be allowed with sound insulation to reduce interior noise levels.

Most proposals for in-fill development and for reconstruction or additions to existing structures should also require special approval by the planning agency. Less noise-sensitive uses are considered compatible with appropriate sound insulation.

Along with these measures to prevent additional future noise impacts in Zone B, steps should be taken to identify specific existing noise-sensitive uses and to determine the best corrective measures for dealing with these problems. Among the actions that might be considered by the airport proprietor are: financial assistance to property owners for sound insulation, acquisition of noise easements, purchase assurance guaranteeing, property owner's fair market value for the properties, or fee simple acquisition and relocation.

Potential property purchases and leases in Zone B should be protected by a noise disclosure ordinance requiring notification of existing and potential noise hazards in the zone.

Noise Exposure Zone B

In this zone noise levels are in the range of 70-75 LDN and can be considered serious. The zone is regularly affected by landings and takeoffs and so that sleep and speech interference can be routinely expected. The area is close to airport operations and limited opportunity is available to provide noise relief through changes in airport and aircraft operating procedures.

Because existing and future noise exposure is serious and persistent, priority attention should be given to the acquisition of as much of this zone as possible by the airport proprietor as a permanent noise solution and to assure adequate land for future airport expansion.

At larger airports where the 70 LDN impact area is very large, total acquisition will not be a practical solution. Non-airport land in Zone B should be restricted to non-noise sensitive uses (with noise protected public areas) or to noise sensitive uses that have been sound insulated to achieve acceptable interior sound levels and that do not provide associated outdoor recreation facilities.

Because of the large size of this area and its distance from airport operations, specific noise patterns may vary from one part of the zone to another. For this reason land use strategies must give consideration to the specific location of the building impacted as well as to the intensity of the noise itself.

Residential and other noise-sensitive uses may be acceptable if located away from exposed to frequent takeoffs and landings, or if they are constructed to provide acceptable interior sound levels and restrict outside recreation areas. Single-family residences and certain cultural, entertainment and recreation facilities should be considered on an individual basis.

Soundproofing should be considered as a corrective measure in all schools, libraries, churches, hospital and nursing homes located near the 70 LDN noise contour.

Potential purchasers and lessees of property in the zone should be protected by a noise disclosure ordinance requiring notification of existing and potential noise problems in the zone.

Noise Exposure Zone C

With noise levels of 65-70 LDN, noise exposure in Zone C can be described as significant but not serious. Usually this area is far enough away from the operational center of the airport so that some relief can be provided through aircraft and airport operational procedures.

Except for certain resource extraction and production activities all proposals for new uses or for in-fill development or for reconstruction or additions to existing uses in this zone should be considered on a conditional basis after detailed review by the local planning agency.

In addition to these measures to prevent future noise exposure problems, steps should be taken to determine the best corrective measures for dealing with existing noise-sensitive land uses in the zone including their possible acquisition and removal.

Potential purchasers and lessees of property in this zone should be protected by a noise disclosure ordinance requiring notification of existing and potential noise exposure.

Noise Exposure Zone D

Zone D has noise exposure levels of 60-65 LDN which can be characterized as annoying but not a nuisance. Public reaction may be evident only at smaller airports with lower background noise and/or in those areas affected by frequent aircraft operations. In the larger urban areas this level of aircraft noise would blend into the daytime noise environment and create little negative community response.

Noise exposure should be of some concern but enough sound insulation can be provided through most local building code standards to make the indoor environment satisfactory for sleeping. The outdoor environment should be satisfactory for recreation and play. Preventive or corrective land use compatability measures in this zone would largely be a matter of local preferences in terms of the desired level of noise protection.

In Decatur, construction standards in existing local building codes provide adequate exterior-to-interior sound level reductions to create a satisfactory indoor environment. Other communities desiring this same level of community noise protection in the 60-65 LDN zone should review local construction standards to be sure that they accomplish the desired noise level reductions.

The Decatur program recommends the application of the noise disclosure ordinance in the 60-65 LD noise zone. It is not recommended here for

statewide application although some of the smaller airports that establish a higher local noise protection goal may want to incorporate this requirement.

Noise Exposure Zone E

With noise exposure levels below 60 LDN, aircraft noise would blend into the daytime noise environment at even the smaller downstate airports in this zone, and very few negative effects from airport operations would result.

However, the Decatur situation illustrates the need for close examination of potential problem areas that might need attention. There are several large tracts of land currently zoned for single-family residential use which are in the 60-65 LDN area but which are directly adjacent to the Decatur Airport. Small unforeseen changes in airport operations could place these areas into a higher noise zone with more serious potential noise impact problems. The Decatur program recommends that these areas be rezoned for nonnoise sensitive use to avoid these potential problems. Similar situations may exist at other airports.

As noted in earlier chapters there appear to be no legal obstacles to implementation of these land use compatibility measures and noise disclosure ordinances by Illinois local home rule governments.

Tables 11 and 12 provide guidelines for land use compatibility and acceptability for specific land uses in the five noise exposure zones identified above. Table 11 incorporates guidelines for new development.

Guidelines for in-fill development and reconstruction or additions to existing uses are shown in Table 12.

The entries in the two tables have the following meanings: Y means the land use is compatible and acceptable in the noise zone; P means the land use is consistent and acceptable if the following provisions are met.

1. Construction standards provide sound insulation sufficient to achieve the following interior sound levels in portions of buildings used as living quarters or where the public is received, in office areas and other noise-sensitive areas:

| | |
|---|------|
| Residential buildings | 45dB |
| Educational/Medical buildings | 45dB |
| Cultural/Entertainment/Recreational buildings | 50dB |
| Office/Commercial/Retail buildings | 50dB |
| Services buildings | 50dB |
| Industrial/Communications/Utilities buildings | 60dB |

C means that the land use requires review by the local planning agency to determine its acceptability in the noise zone and whether certain conditions are required for approval. This review will be based upon the following factors:

1. Nature of proposed use and extent of associated outdoor activities.
2. Relation of proposed use to adjacent land uses and consistency with comprehensive planning.
3. Frequency of exposure to aircraft overflight.

4. Location of proposed use relative to existing and proposed runways, taxiways, engine rev up areas, aircraft flight tracks and onground operating and maintenance areas.

5. Location, site design and construction standards which may reduce exterior to interior noise transmission and shield outdoor activities.

N means that the land use is not compatible and not acceptable in the noise zone.

Table 11

Land Use Compatibility Guidelines for New Development in Noise Exposure Zones at Downstate Illinois Airports

| Land Use Type | Noise Exposure Zone | | | | |
|---|---------------------|----------------|----------------|----------------|---------------|
| | A > 75 LDN | B 70-75 LDN | C 65-70 LDN | D 60-65 LDN | E < 60 LDN |
| 1. Residential | | | | | |
| A. 1 & 2 family dwellings, multi family - separate entrance | N | N | C | Y | Y |
| B. Multi family - shared entrance, rooming houses | N | P | P | Y | Y |
| C. Mobile homes | N | N | N | Y | Y |
| D. Transient lodgings | C | P | P | Y | Y |
| 2. Educational - Medical | | | | | |
| A. Schools, libraries, churches, hospitals, nursing homes | N | C | P | Y | Y |
| 3. Cultural, Entertainment, Recreation | | | | | |
| A. Indoor (incl. band shells, amphitheaters) | N | N | C | Y | Y |
| B. Outdoor | N | C | Y | Y | Y |
| 4. Office, Commercial, Retail, Wholesale, Services | N | P | Y | Y | Y |
| 5. Manufacturing, Warehousing, Selected Trade & Services | C | P | Y | Y | Y |
| 6. Transportation, Comm. Utilities | C | P | Y | Y | Y |
| 7. Resource Extraction & Production | | | | | |
| A. Agriculture excl. livestock | Y* | Y* | Y** | Y | Y |
| B. Livestock farming | N | Y* | Y** | Y | Y |
| C. Other resource extraction & production | Y | Y | Y | Y | Y |

Note: See attached notes for expanded list of land uses.

* Residential buildings not permitted.

** Residential buildings are "conditional".

Table 12

Land Use Compatibility Guidelines for Infill Development and Reconstruction or
Addition to Existing Buildings in Noise Exposure Zones at Downstate Illinois Airports

| Land Use Type | Noise Exposure Zone | | | | |
|---|---------------------|----------------|----------------|----------------|---------------|
| | A > 75 LDN | B 70-75 LDN | C 65-70 LDN | D 60-65 LDN | E < 60 LDN |
| 1. Residential | | | | | |
| A. 1 & 2 family dwellings, multi family - separate entrance | N | C | C | Y | Y |
| B. Multi family - shared entrance, rooming houses | N | P | P | Y | Y |
| C. Mobile homes | N | C | C | Y | Y |
| D. Transient lodgings | C | P | P | Y | Y |
| 2. Educational - Medical | | | | | |
| A. Schools, libraries, churches, hospitals, nursing homes | N | C | P | Y | Y |
| 3. Cultural, Entertainment, Recreation | | | | | |
| A. Indoor (incl. band shells, amphitheaters) | N | C | C | Y | Y |
| B. Outdoor | C | C | C | Y | Y |
| 4. Office, Commercial, Retail, Wholesale Services | C | P | Y | Y | Y |
| 5. Manufacturing, Warehousing, Selected Trade & Services | C | P | Y | Y | Y |
| 6. Transportation, Comm. Utilities | C | P | Y | Y | Y |
| 7. Resource Extraction & Production | | | | | |
| A. Agriculture excl. livestock | Y* | Y* | Y* | Y | Y |
| B. Agriculture - livestock | N | Y* | Y* | Y | Y |
| C. Other resource extraction & production | Y | Y | Y | Y | Y |

Note: See attached notes for expanded list of land uses.

* Reconstruction or additions to residential building is "conditional".

Notes to Tables 11 and 12.

The following land uses from the Standard Land Use Coding Manual (SLUCM) are included in each of the categories listed in Tables 10.1 and 10.2. Numbers in parenthesis refer to SLUCM land use code numbers. (X) means the use is a part of the category shown.

1. Residential

- A. (11.1) Single Units, (11.2) Two units,
- B. (11.3) Apartments (12) Group quarters (13) Residential hotels
(16) Other residential.
- C. (14) Mobile home parks
- D. (15) Transient lodgings

2. Educational, Religious, Medical

- (68X) Schools and Libraries (71X) Churches, (65.1) Hospitals
(65X) Nursing homes

3A. Cultural, Entertainment, Recreation - Indoor

- (71X) Cultural activities (71.2) Nature exhibits, (72) Public assembly
(72.1) Auditoriums, concert halls (72.11) Outdoor musicshells and
amphitheaters.

3B. Cultural, Entertainment, Recreational - Outdoor

- (72.2) Outdoor sports arenas, spectator sports, (73) Amusements
(74) Recreational activities (incl., golf courses, riding stables,
water recreation) (75) Resorts and group camps (76) Parks (79) Other
cultural, entertainment recreation.

4. Office Commercial Retail Services.

- (51) Wholesale trade (excl. warehousing) (52-59) Retail trade
(60-69) Services, (except schools, libraries, hospitals, contract
construction) including finance, insurance and real estate; personal
business, repair and professional services, medical services:

5. Manufacturing and Warehousing

- (20-35) Manufacturing, (51X) Warehousing (66) Contract construction
services.

6. Transportation, Communications, Utilities

- (40-46) Transportation (47) Communication (48) Utilities (49) Other
transportation, communication, utilities.

7. Resource Production and Extraction.

- A. (81) Agriculture (excl. livestock)
- B. (82) Agriculture - livestock
- C. (83) Forestry, (84) Fisheries (85) Mining (89) Other resource
production and extraction.

Chapter 7
Noise Control and Land Use Compatibility
Planning Programs for Airports

The Decatur Noise Demonstration Project has shown how existing and future airport noise exposure problems can be identified at a smaller airport along with the measures that can be taken to deal with these problems. Recommendations are also included on how the Decatur program can be changed to make it applicable to other downstate Illinois airports.

An important finding of this report was that Decatur does not have a serious airport noise problem now, and that potential noise exposure problems in the future are likely to be relatively small. This is not likely to be the case at all downstate airports -- some may have serious noise exposure problems now and others may develop serious problems in the future. What can Illinois airport operators do to reduce existing noncompatible land uses around airports and of preventing the introduction of additional noncompatible land uses?

Coordinated planning involving airport proprietors, local land use authorities, airport users and other affected parties is an essential first step.

In 1976 the FAA initiated the Airport Noise Control Land Use Compatibility (ANCLUC) planning program with the objective "to promote a planning process through which the airport proprietor can examine and analyze the noise impact created by the operation of his airport as well as the costs and

and benefits associated with various selected alternative noise reduction techniques, individually and/or in combination." (U.S. Department of Transportation, Federal Aviation Administration, 1976).

With the Aviation Safety and Noise Abatement Act of 1979 the Congress took action to remove the major obstacles to noise compatibility planning and to put the NACLUC planning process on a firmer legislative lease.

Federal grants covering up to 80 percent of the cost for plan preparation and implementation were authorized.

As a further inducement to airport operators to participate in the program the Act provides protection to the operators against suits for noise damages based upon the information in any noise exposure map prepared in accordance with the Act. Further, the Act specified that no person acquiring property after its enactment and with actual or constructive knowledge of the noise exposure map shall be entitled to recover damages for noise attributable to the airport.

Implementing regulations for the Act are incorporated in Federal Aviation Regulations (FAR) Part 150.* In keeping with the Act the regulations establish a single system for the measurement of airport (and background) noise, a single system for determining the exposure of individuals to airport noise, and a standardized airport noise compatibility planning program.

* Full citation on FAR 150

The planning program includes:

- (1) provision for the development and submission to the FAA of Noise Exposure Maps and Noise Compatibility Programs by airport operators;
- (2) standard noise units, methods and analytical techniques for use in airport assessments;
- (3) identification of land uses that are normally compatible (or noncompatible) with various levels of noise around airports;
- (4) identification of measures for the reduction of existing and future noise exposure problems;
- (5) procedures and criteria for FAA approval or disapproval of noise compatibility programs by the Administrator.

The Airport and Airway Improvement Act of 1982 put funding for airport noise related projects on a much firmer basis. The Act requires that a minimum of 8 percent of the total annual authorization under the Act be allocated for land use compatibility planning and implementation.

Airport noise compatibility planning has the goals of reducing existing noncompatible land uses around airports and of preventing the introduction of additional noncompatible land uses through the cooperative efforts of all those involved. The Part 150 program is voluntary and airport operators are encouraged to participate.

Airport operators in Illinois interested in participating in this program may contact the Illinois Department of Transportation, Division of Aeronautics to obtain information on how to proceed.

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3. Supplementary Notes**4. Abstract (Limit: 200 words)**

This report represents the second and final phase of an airport noise demonstration project at the Decatur Airport that was launched in 1982. The objective of this project was to show how an airport and its neighboring community can develop and implement a program to correct and prevent airport noise exposure problems.

During Phase 1 the consultant for the Department of Energy and Natural Resources (ENR) worked with local municipal and county officials to develop a local airport noise input mitigation program for the Decatur Airport which could provide a basis for a statewide program. The purpose of Phase II was to continue work that was started in Phase 1 and to develop statewide airport noise recommendations for the smaller airports outside Chicago.

Chapter 1 discusses the findings and recommendations of the entire report. Chapter 2 provides background information on aircraft noise abatement techniques. An examination of existing and future aircraft noise exposure around the Decatur Airport is provided in Chapter 3. Chapters 4 and 5 include recommended land use compatability actions for reducing noise impacts and steps for implementing these actions.

Consistent with the concept of a demonstration project, it was anticipated that this Decatur work would produce results which might be useful in dealing with existing and potential noise exposure problems at other downstate Illinois airports. This potential is explored in Chapter 6.

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| | |
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